

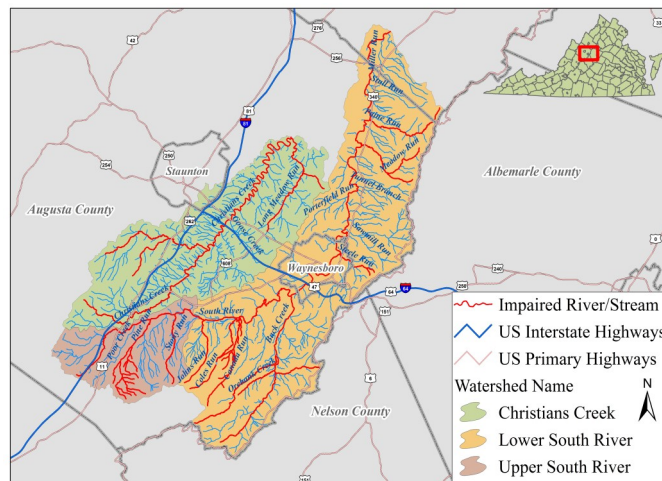
## Project Location and Background

The South River and Christians Creek watersheds are located in the Shenandoah River Basin in Augusta County, Virginia. A small portion of the lower South River extends into Rockingham County. Land use in the watersheds is predominantly agricultural and forested. Christians Creek was listed as impaired on Virginia's *Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Report* due to violations of the state's water quality standards for fecal coliform bacteria and the General Standard (benthic), for which sediment and phosphorous were discovered to be the primary stressors. TMDLs were developed for Upper South River, South River, and Christians Creek in 2004, 2009, and 2002, respectively. A TMDL implementation plan was completed in October 2010 in conjunction with City of Waynesboro and Augusta County. Implementation began in several phases with the first project beginning in 2009. A 319(h)-funded project began in 2017

**Table 1: South River and Christians Creek Agricultural BMP Summary: January 2009— June, 2019**

Control Measure	Units	Goal	Installed	%
<b>Agricultural</b>				
Stream Exclusion and Stream Protection (Fencing)	F	571,027	323,860	57
Stream Exclusion and Stream Protection (Fencing)	S	297	110	37
Stream Exclusion and Stream Protection (Fencing)	A buff	423	263	62
Stream Exclusion Maintenance (Linear ft goal is an estimate)	F	28,840	31,011	108
Stream Exclusion Maintenance	S	15	12	80
Improved Pasture	A	37,835	4,559	12
Streambank stabilization	F	6,000	0	0
Vegetated buffers	A	90	488	542
Cover crops	A	1,219	22,254	1,826
Tree Planting (Aforestation)	A	N/A	23	N/A
Loafing Lot Management	S	N/A	4	N/A
Permanent Vegetated Cover	A	N/A	813	N/A
Animal Waste Control Facilities	S	18	13	72

A = Acres, A buff = Acres of buffer, F = Linear Feet, S = System; **Note:** BMP counts only include 319-funded and state VACS. NRCS EQIP funded practices are not included.



## Implementation Highlights—Agriculture

The South River and Christians Creek implementation project has been administered in two phases. The first phase was by the Headwaters Soil and Water Conservation District (HWSWCD) through state funding provided by the Department of Conservation and Recreation. The second phase started in 2017 and is administered by the Chesapeake Bay Foundation in collaboration with HWSWCD with Federal Section 319(h) funding provided by the Department of Environmental Quality. The grant awards are directed at agricultural BMP implementation. Table 1 shows agricultural BMPs implemented since the project began in January 2009 and overall implementation goals for the project area. Note that not all BMP goals included in the implementation plan are shown in the table due to the extensive nature of the overall BMP list. Since the project started in 2009, over 1,100 agricultural BMPs have been installed, resulting in over 61 miles of stream fenced from livestock access and 22,254 acres of cover crop installed. Maintenance of nearly 6 miles of previously installed stream exclusion fence has also been completed, allowing older BMPs to continue providing pollution reduction benefits. (continued on pg. 2)

**The Virginia Nonpoint Source Management Program:** The Virginia NPS Management Program is managed by the Virginia Department of Environmental Quality (DEQ) and is funded, in part, through grants from the U.S. Environmental Protection Agency, under the Clean Water Act Section 319(h). For more information regarding Virginia's Nonpoint Source Management Program, please visit us on the web at: <http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx>. An electronic copy of this report can be found here: <http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProjects.aspx> General NPS Program questions? email: [npsgrants@deq.virginia.gov](mailto:npsgrants@deq.virginia.gov)

### Non-Agricultural Implementation Highlights

During the last ten years, many urban and residential septic projects have been completed by partners identified in the implementation plan. Although not detailed in this report, some of the highlights include: partnerships with City of Waynesboro, National Fish and Wildlife Foundation, EPA Highlands Action Program, and VA Department of Forestry, and VADEQ Stormwater Local Assistance Fund. Other highlights include stormwater projects including 3,000 feet streambank stabilization, 10 acres of constructed wetlands, 1.6 acres riparian buffer, bioretention, and detention basin retrofits. Additionally, Augusta County received a Water Quality Improvement Fund grant that addressed failing or failed septic systems by connecting 41 septic systems to public sewer system within the South River Watershed.

**Photos:**

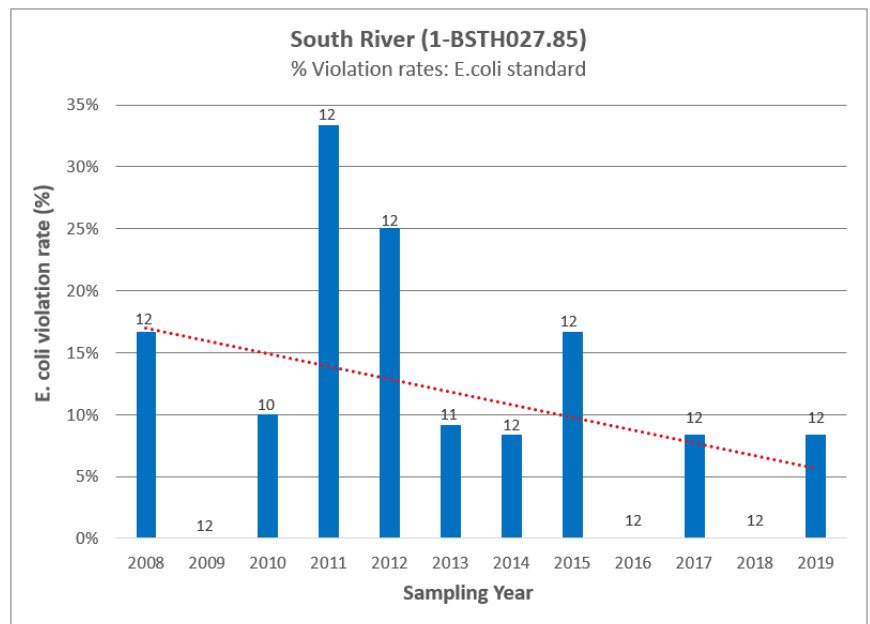
**Pre-Construction (left) and Post Construction (right) of phase one of stream restoration at a City of Waynesboro park**



### Water Quality Monitoring Results

Water quality data collected by DEQ for the period of 2008-2019 were analyzed to determine the impact of BMPs implemented in the project area on *E. coli* violation rates and associated long-term trends, if any, in water quality. The bar graph at right shows the percent violation rates for samples collected annually at a monitoring station in South River, which did not meet the water quality standard of 235 cfu/100 mL. The number of samples collected each year is shown above each bar. The linear regression fitted to the data shows a decreasing trend in violation rates over the sampling period, indicating possible water quality improvements in the watershed.

Monitoring over a longer period of time with consistent trends is needed to corroborate water quality changes.



Graph 1: *E. coli* data for South River (Station 1-BSTH027.85), 2008-2019

**For More Information Please Contact:**

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